Office of Knowledge, Information & Data Services (KIDS)

2012 District Technology Readiness Report

Highlights

Version 1.0 - January 31, 2012

Technology Readiness Report
Executive Summary

Since the beginning of the Kentucky Education Technology Program (KETS) in 1992, school districts within the Commonwealth of Kentucky have invested in innovative approaches for providing improved learning opportunities for students through making large investments in technology. These investments included ensuring students have access to a standard set of "technology tools" (i.e. 6:1 ratio of students to computers, access to email, implementation of statewide standard administrative tools, installation of high speed internet connections, etc.).

- In recent years Kentucky teachers and students have seen over $50million invested in modernizing instructional devices;
- Providing access to more devices through virtualized desktop solutions such as N-Computing devices;
- Providing cloud based solutions for various instructional and assessment services; and
- Increasing the amount of bandwidth available to improve the learning experience of students and teachers.[1]

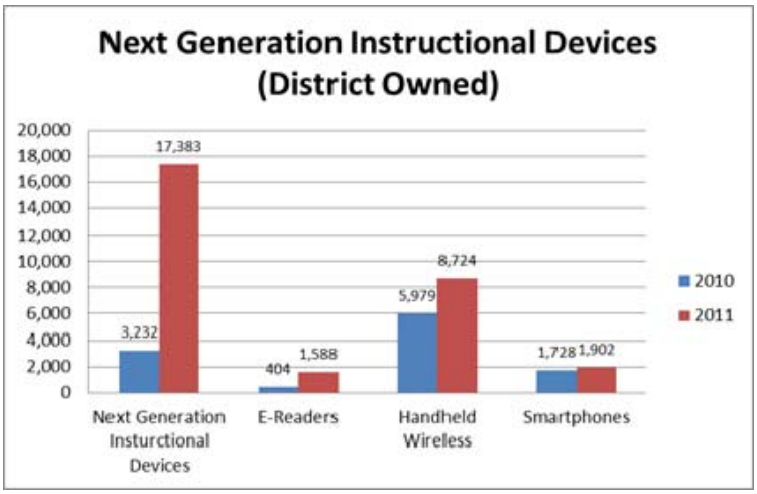
Next Generation Instructional Devices

While traditional instructional devices such as desktops, laptops and tablets continue to have an identifiable and viable need within K-12 schools and will continue to do so, over the past 2-3 years new technologies coupled with innovative approaches to using non-traditional devices have started to change instructional practices within the classroom.

These non-traditional devices, what we call "Next Generation Instructional Devices" include a variety of types of technologies. Devices known as "slates" which are devices larger than a mobile smartphone that use touchscreens are probably receiving the most attention today as an instructional tool in the classroom. The widespread popularity of the Apple iPad® as first a consumer device and more recently as an educational tool has escalated technology in the classroom. A similar type of device but on a much smaller scale is the smartphone which provides capabilities that mirror the slate device with the added functionality of being a cell phone. While many educators might at first balk at the idea of a student having a phone in class, the smartphone also can provide a method for students and educators alike to access information that is based on the internet (think using Google for research purposes) or access cloud-based services such as might be used for in-class formative assessments or student collaborative tools. While Next Generation Instructional Devices also can be used to describe e-readers and handheld wireless devices such as an iPod© Touch, the slate and smartphone categories are key to this discussion for several reasons.

[1] **2011 District Technology Readiness Report Highlights** http://applications.education.ky.gov/trs_reports/

Between 2010 and 2011 the number of slate devices owned by school districts increased five-fold. Even more astonishing is the fact that of the approximately 17,400 slate devices that districts report owning, over 17,000 of them are Apple iPads. This rapid increase has not only been fueled by school districts assigning them to staff but just as significantly deploying the devices as part of district funded 1:1 initiatives. Examples such as Woodford County High School and Hancock County High School provide insight into district approaches that capitalize on these Next Generation Instructional Devices and innovative approaches to enhancing the student learning experience. The ability to provide each student an instructional device that is lightweight, inexpensive compared to traditional laptops, with battery capacity that will last the entire school day and has Wi-Fi capability so students can access internet based resources has the potential to much better meet the key instructional requirements in the classroom.



The challenge with any 1:1 district funded initiative can be financial sustainability. The question of how to continue to fund a regular replacement cycle as district budgetary resources shrink is an essential one. One potential answer to both the continued movement within K-12 for always on, anywhere, anytime learning and ever shrinking budgets may lay within the proliferation of personally owned Next Generation Instructional Devices.

BYOD (Bring Your Own Device)

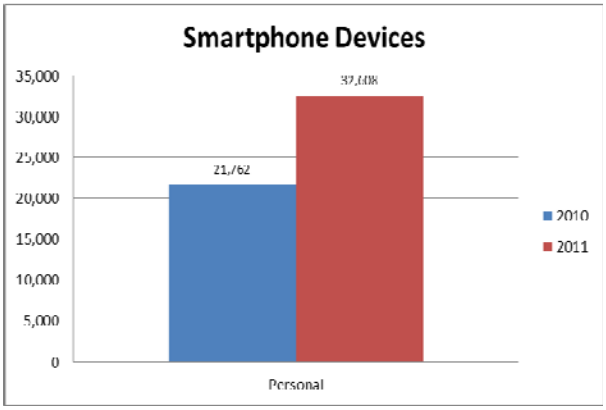
An approach commonly referred to as BYOD (Bring Your Own Device) or sometimes as BYOT (Bring Your Own Technology) can provide schools and students with the ability to enhance the instructional environment. This is for the entire school building, not just the classroom. Over 75% of parents surveyed indicated that they would be willing to allow their child to bring their laptop, slate, smartphone or other appropriate instructional device to school if allowed. Leveraging these personally owned devices can reduce the financial burden to districts while increasing access to instructional devices that can help move a district toward the goal of 1:1 computing.

While not all students own or can afford their own instructional device, allowing those who can to bring their device to school can actually help all students. Doing so frees up finite district financial resources that could be used to:

- Refresh existing instructional devices that are no longer modern;
- Provide additional instructional resources for staff and students; and
- Ensure that where needed a modern network is available for students to have anywhere access to instructional resources.

In a January 10, 2012 article in The Louisville Courier-Journal, Bullitt County Schools Superintendent Keith Davis was quoted as saying***, "We are trying to buy devices for our classrooms when we can, but there's just not enough money for us to buy one for every kid," Davis said. "If there's a student who has their own and wants to use it, well, then that frees up the school computer for someone who doesn't."***

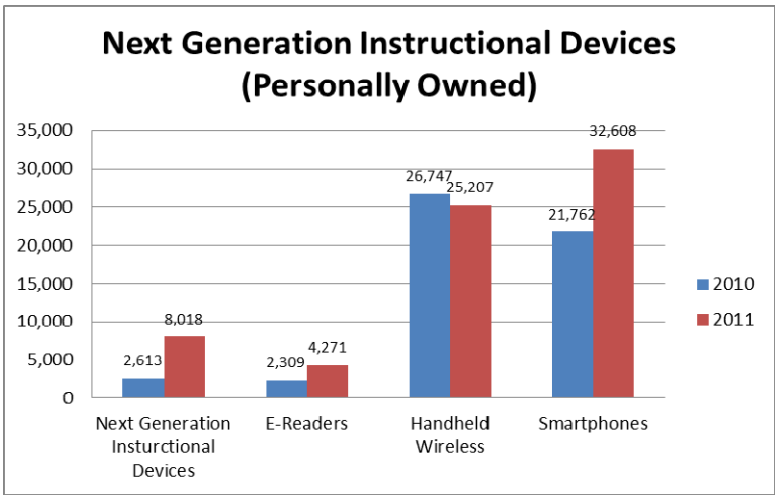
According to the most recent Technology Readiness Data, the largest area of growth for personally owned Next Generation Instructional Devices are the number of smartphones. While school districts are more prone to purchase Apple iPad type devices, when it comes to the type of devices that individuals have available for personal use, the smartphone is the predominant tool that can be leveraged for instruction. From 2012 to 2011 the number of personally owned smartphones increased by 50%. While smaller in size than the typical slate type of device, smartphones still typically have the ability to connect to district Wi-Fi hotspots that are widespread throughout schools across Kentucky thereby easily allowing them to be used by students as instructional devices. These devices also have the added ability to use 3G and 4G cellular service that can provide a quality experience where available for continuous learning by students.



Innovative District Leadership

Simply having access to personally owned devices or local districts making an investment in Next Generation Instructional Devices is not enough. Embracing the philosophy that students must be able to have access to instructional devices anytime and that districts are faced with decreasing budgets to spend on district owned devices poses challenges that require forward thinking.

Historically schools have been reluctant to allow students to bring their own computers and phones to school let alone use them. In fact they have often explicitly prohibited these devices even being brought to school. With all of the reasons mentioned above for why Next Generation Instructional Devices and personally owned devices are coming of age, districts are starting to modify board policies and Acceptable Use Policies on what is permissible. Districts are supporting or even encouraging personally owned devices to be brought to school for instructional purposes.



There are close to 60% of districts that allow personally owned devices to be brought to school by students and over 80% allow personally owned devices to be brought by teachers and administrators. However simply allowing personally owned devices will not be the complete answer to enhancing the learning experience for students as there are many foundational pieces that must be in place for success. Teacher, administrator and district leadership buy-in; professional development opportunities for teachers on how to seamlessly integrate Next Generation Instructional Devices (whether personally owned or district owned); and student responsibility through initiatives such as Digital Drivers Licenses all play a role in a successful educational environment.

Conclusion

When you combine the number of districts who have policies in place and/or encourage the use of personally owned devices with the growing popularity of Next Generation Instructional Devices, districts can more readily begin to address the desire for always on, anywhere, anytime learning. Adding to this equation is the fact that students already know how to use their own technology; large numbers have access to their own devices; and using a device that they are comfortable with will lead students to become more engaged in and "own their learning". All of these factors provide opportunities for districts to become innovative with enhancing the student learning experience.

Highlights/Key Points of 2012 District Technology Readiness Report

The Kentucky Technology Readiness Report provides a snapshot of technology infrastructures throughout Kentucky schools and districts. Data for the survey is gathered from districts in December of each year.

All data collected in December 2011 for the current District Technology Readiness Report is available for download from the Technology Readiness Report Web site. This report and supporting district data can be located and downloaded at: http://applications.education.ky.gov/trs_reports/ /

The following summary highlights some of the technology trends in Kentucky as reflected in the latest survey:

- **More students have computers (79 percent) and Internet access (73 percent) at home.** These percentages are up 1 percent from 2010. Of those students who have Internet access at home, approximately 79 percent have broadband (high-speed) access such as cable modem or DSL (usually provided by the local telephone company). *Refer to Section 1, Home Access for Students for data.*

- **Approximately 58 percent of districts allow students to bring personally owned instructional devices** --laptops, tablets, mobile devices to school. Almost 82 percent of districts allow teachers and 83.5 percent allow administrators to bring personally owned instructional devices to school. These percentages have continued to increase over past years as more districts are moving towards a bring your own device policy and plan. *Refer to Section 4, Personally Owned Computing Devices for data.*

- **Almost one third of district owned instructional devices are mobile, which is defined as laptops, tablets and next generation instructional devices.** This tends to reflect the growing recognition of ease of access as a key component of always on, anywhere and anytime learning. *Refer to Section 2, Total Number of Instructional Devices that are Laptops/Tablets for data.*

- **The infusion of $50M in funding from the General Assembly for the Instructional Device Upgrade Project during FY06 and FY07 resulted in an ongoing increase to the number of devices which meet or exceed minimum standards to the point that 83% of student devices currently qualify.** However, without continued funding methods being available for refreshing student instructional devices, districts will begin to see this number decrease at first slowly in calendar year 2012 and then rapidly decreasing through 2014. *Refer to Section 2, Total Number of Instructional Devices for data.*

- **Kentucky schools report a total of 261,398 student instructional devices that meet or exceed minimum technical standards** -- desktops, laptops and tablets. This is almost 12,000 more devices that meet and/or exceed the minimum standards due to district purchase than districts owned in 2010. *Refer to Section 2, Total Number of Instructional Devices for data.*

- **Multiple factors are leading districts to move to the latest versions of the Windows OS and/or the latest Microsoft productivity suite**. This is due in part to more districts participating in the Microsoft licensing agreements as well as the retirement of older machines. 29 percent of all instructional devices running Microsoft Office utilize the latest version (Office 2010). 30 percent of all instructional devices using a Windows operating system run Windows 7. *Refer to Section 3, Instructional Device Software for data.*

- **Districts are taking advantage of video based communications to improve both communications and remote learning opportunities.** Almost 67 percent of all districts use desktop-based communications like WebEx, Elluminate and others while nearly 86 percent of districts use web-based options such as iChat and Skype. *Refer to Section 9, Video Conferencing/Web 2.0 Collaboration/On-line Assessment for data.*

- **The majority of districts (82 percent) have adopted digital citizenship curriculum or policies for students and staff.** 68 percent of districts assess students' technology skills. *Refer to Section 5, Student, Instruction and Leadership Technology Skills for data.*

- **Thanks to investment by districts and KDE, the number of schools connected by fiber-like connections (large Internet highways) to the Internet continues to increase each year from 67 percent in 2006 to 96 percent in 2011.** The increase enables schools to use more diverse Internet-based instructional and assessment opportunities for students. *Refer to Section 6, Network Connectivity for data.*

- **It is estimated that, during the next two years, districts will replace approximately 40 percent of the telephone systems within school buildings. Of these schools, 83 percent, will choose to transition to VOIP (Voice Over IP) with their phone upgrade.** This allows school districts to leverage their investment in fiber technology to reduce recurring costs by investing in non traditional phone systems such as VOIP, managed and/or hosted Voice Services. *Refer to Section 7, Ease of Access to Telephonic Services for data.*

- **Since 2007, access to LCD projectors or other large-area viewing devices (i.e., plasma or LCD large-screen televisions) has become an expected part of the instructional classroom**. Data shows that there were 1540 classrooms added and 1719 projection devices. This leads us to believe that almost every classroom has a projection device included. Students no longer must use desktop monitors or small televisions for viewing instructional materials. School districts are investing in Intelligent/Smart Classroom technologies to further the educational experiences of students. *Refer to Section 8, Intelligent Classrooms for data.*

- **Almost 68 percent of all schools and districts encourage teachers and district staff to use Web 2.0 tools (e.g., Facebook, Twitter, YouTube)**, yet only half of all districts have a board of education policy addressing the issue. Only 8 percent of districts strictly prohibit the use of Web 2.0 by teachers and district staff. *Refer to Section 9, Video Conferencing/Web 2.0 Collaboration/On-line Assessment for data.*

Section 1: Student Instructional Devices/Home Access

Student Instructional Device Numbers

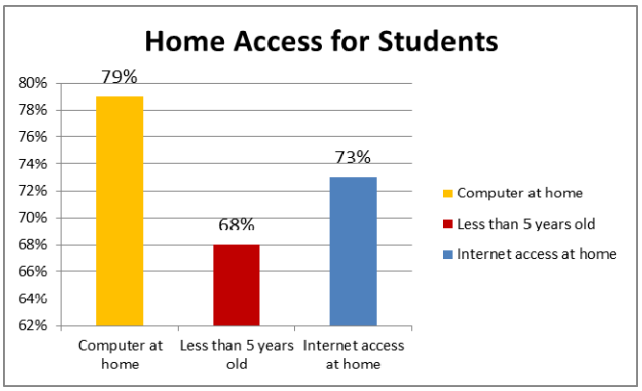
- 232,111 total student instructional devices (desktops, laptops and tablets) in Kentucky's public schools.
- 6% increase since last year.
- Largest increase is among elementary schools – 8% increase (approximately 8,119 devices added last year for a total of 108,454 instructional devices in elementary schools).
- There was an increase among Secondary schools (Middle, HS, Alternative) of 4% for a total of 123,657 instructional devices in secondary schools.
- The student-to-workstation ratio improved to 2.56:1 (from 2.68:1 last year). In other words for every 2:56 students there is one Internet-connected instructional device (desktop, laptop, or tablet).

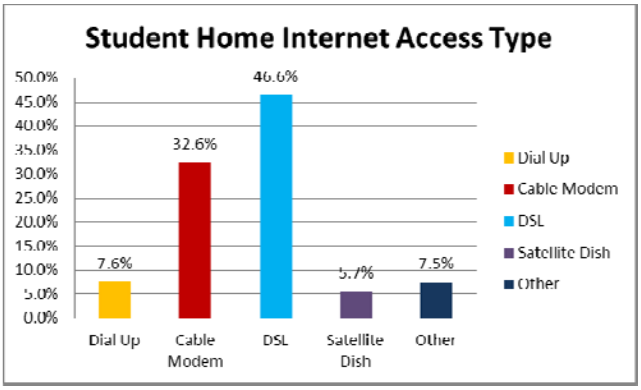
Student Instructional Device Locations

- 61% of elementary school devices are located in standard classrooms (no change from 2010).
- 21% of secondary school devices are located in standard classrooms (a 2% percent decrease from 2010).
- The percentage of devices that stay with students at the secondary level increased to 10% in 2011 when compared to 2010.

Home Access for Students

- 79% of students have computers at home.
- 68% of students have computers that are less than five years old.
- 73% of students have Internet access at home (7.6% dial up, 32.6% cable modem, 46.6% DSL, 5.7% satellite dish, 7.5% other).





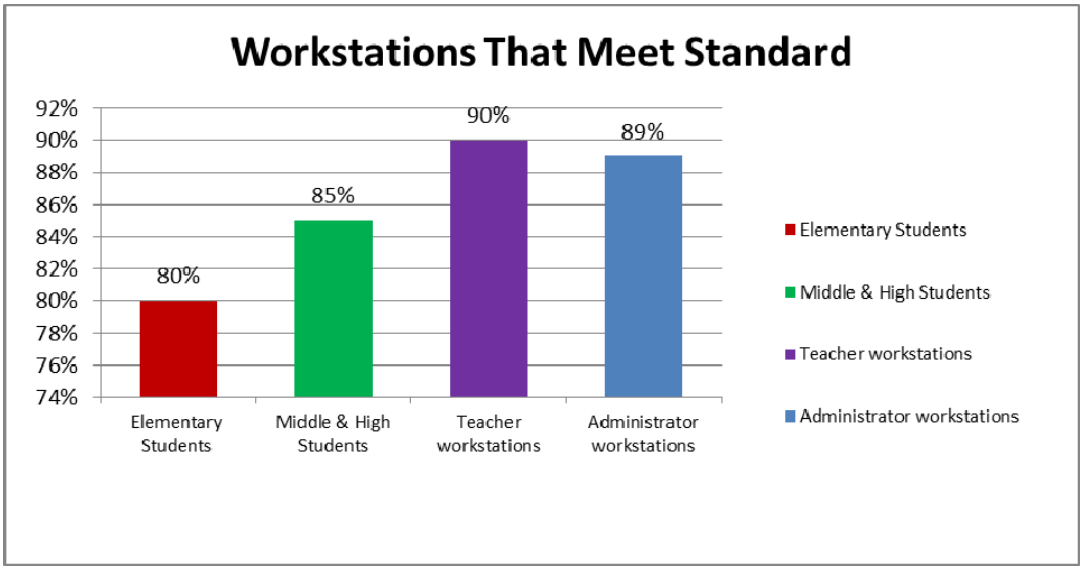
Home Access for Teachers

- 95% of teachers have computers at home.
- 75% of teachers have computers that are less than five years old.
- 92% of teachers have Internet access at home (5% dial-up, 32% cable modem, 53% DSL, 5% satellite dish, 5% other).

Section 2: Age, Mobility and Availability of School District Instructional Devices

How modern are the instructional devices based on an online testing standard determined by the Kentucky Department of Education?

Minimum Standard for PC Platform: Desktop - 2.8 GHz, Laptop – Celeron M 1.5 GHz:
*****Minimum Standard for Macintosh Platform: Desktop – 1.83GHz, Laptop – 1.33 GHz***



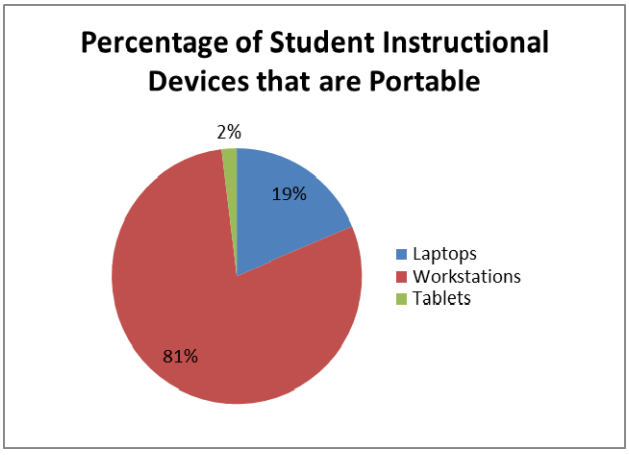
- 261,398 out of 309,559 total workstation devices meet or exceed the minimum standards (no percent change from 2010).

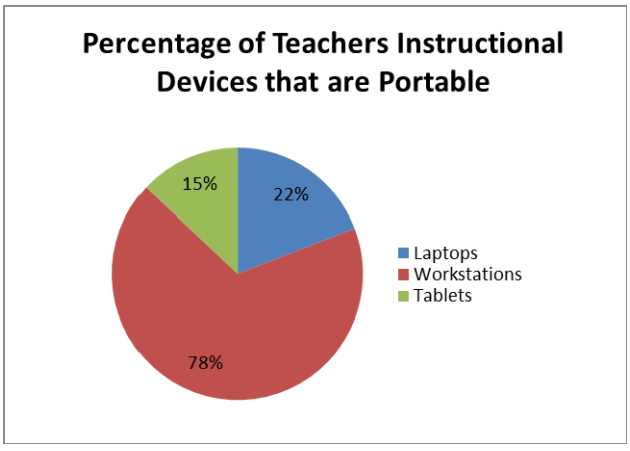
Percentage of instructional devices that are laptops

- 19% of all student instructional devices are laptops (up from 18% in 2010).
- 22% of all teacher instructional devices are laptops (up from 21% in 2010).

Percentage of instructional devices that are Tablets

- 2% of all student instructional devices are tablets (up from less than 1% from 2010).
- 15% of all teacher instructional devices are tablets (up from 12% in 2010).

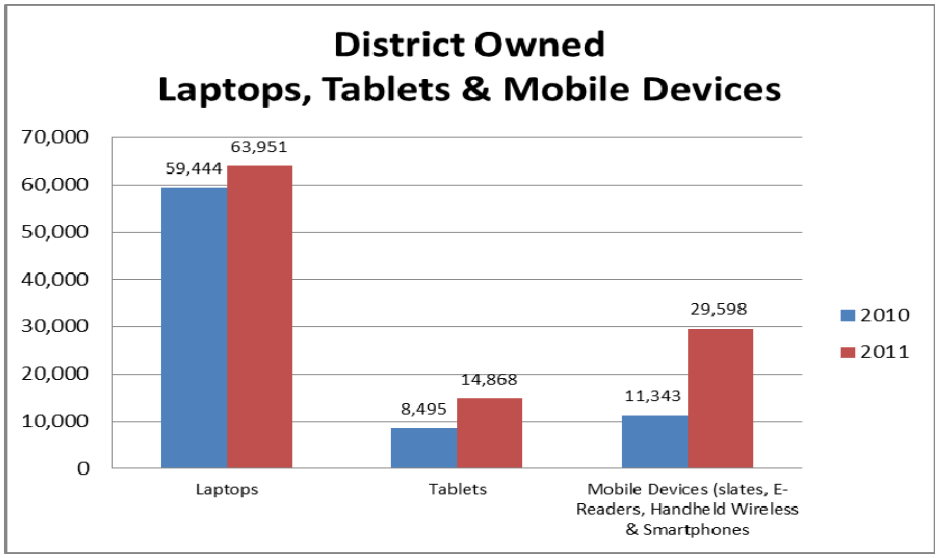


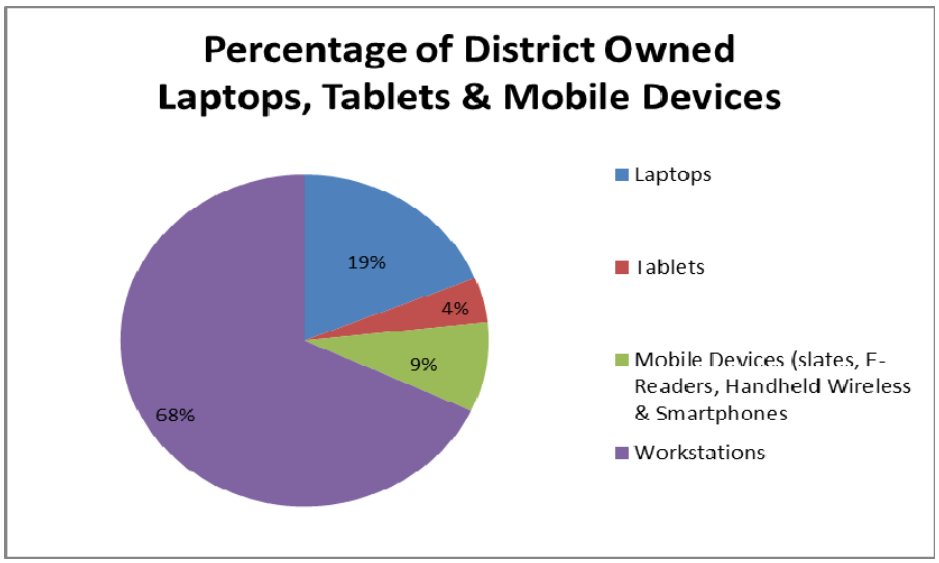


Percentage of Laptops, Tablets & Mobile Devices

339,157 total district owned instructional devices (desktops, laptops and tablets) and mobile (defined as slates, e-readers, handheld wireless devices and smartphones) in Kentucky's public schools in 2011. This is a 10% increase from 2010.

- 20% of all district owned instructional and mobile devices are laptops (63,951) in 2011. This is an increase of 7.5% (4,507 devices) from 2010.
- 4% of all district owned instructional and mobile devices are tablets (14,868) in 2011. This is an increase of 75% (6,373 devices) from 2010.
- 9% of all district owned instructional and mobile devices are Next Generation Devices (defined as slates, e-readers, handheld wireless devices and smartphones) (29,598) in 2011. This is an increase of 62% (18,255 devices) from 2010.
- 68% of all district owned instructional and mobile devices are workstations (230,740) in 2011. This is an increase of 1% (2,797 devices) from 2010.

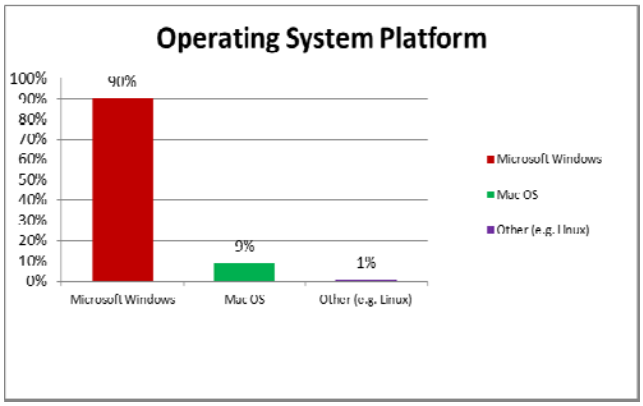


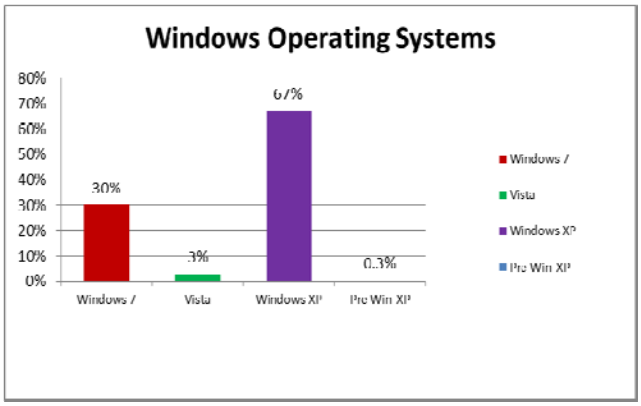


Section 3: Instructional Device Software

Operating Systems

- Microsoft (Windows 7, Vista, Windows XP, Pre-Windows XP): 90%.
- Mac (OS X, OS 9): 9%.
- Other (neither Windows or Mac – e.g. Linux): 1%.





Microsoft Windows OS * *Note - Due to rounding some percentages may equal more than 100%*

- 30% of all workstations have Windows 7.
- 3% of all workstations have Vista.
- 67% of all workstations have Windows XP.
- 0.3% of all workstations have Pre-Windows XP.

Instructional Device Upgrade

26% of all instructional devices are planned for an upgrade to Windows 7 in the next 12 months.

Student Microsoft Workstations

- 28% of all workstations have Windows 7.
- 3% of all workstations have Vista.
- 68.5% of all workstations have Windows XP.
- 0.5% of all workstations have Pre-Windows XP.

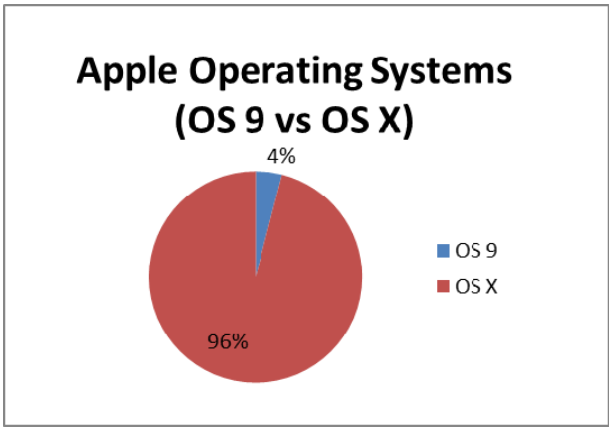
Teacher Microsoft Workstations * *Note - Due to rounding some percentages may equal more than 100%*

- 36% of all workstations have Windows 7.
- 3% of all workstations have Vista.
- 61% of all workstations have Windows XP.
- 0.06% of all workstations have Pre-Windows XP.

Administrator Microsoft Workstations

- 35.5% of all workstations have Windows 7.
- 3% of all workstations have Vista.
- 61% of all workstations have Windows XP.
- 0.5% of all workstations have Pre-Windows XP.

Apple Workstations: 9% of all workstations throughout the state are Apple (approximately 27,524 total instructional devices in 2011, compared to 24,275 in 2010).



Apple OS X

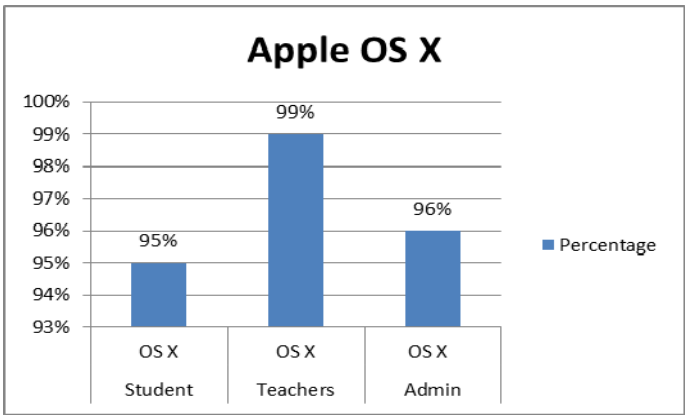
96% of all Apple OS devices are OS X.

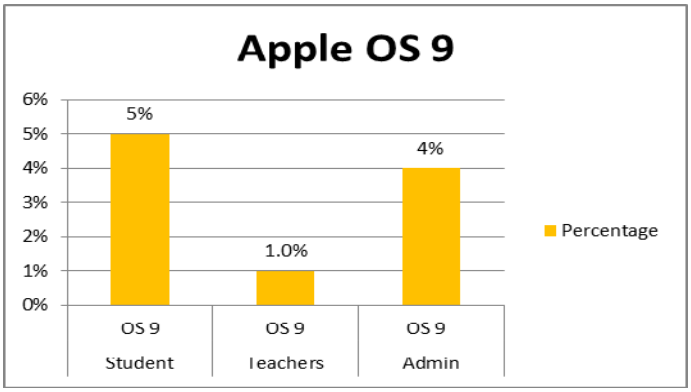
- 95% of the Apple OS student workstations have OS X.
- 99% of the Apple OS teacher workstations have OS X.
- 96% of Apple OS administrator workstations have OS X.

Apple OS 9

4% of all Apple OS devices are OS 9.

- 5% of the Apple OS student workstations have OS 9.
- 1% of the Apple OS teacher workstations have OS 9.
- 4% of Apple OS administrator workstations have OS 9.





Productivity Software

- 89% of all instructional devices have Microsoft Office (Office 2010, Office 2007 or Office 2003 [or earlier]).
    - 29% of all instructional devices running Microsoft Office utilize Office 2010.
    - 40% of all instructional devices running Microsoft Office utilize Office 2007.
    - 31% of all instructional devices running Microsoft Office utilize Office 2003 or earlier.
- 5% of all instructional devices have Office for Mac (Office 2008, Office 2004 or earlier).
- 6% of all instructional devices have Open Office or other.

Microsoft Office Application (Student)

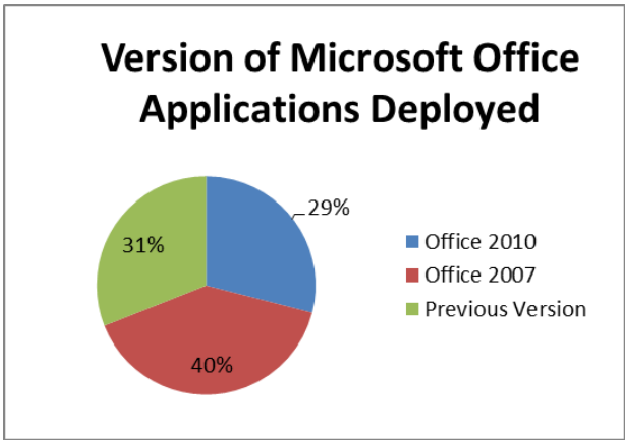
- 28% of student instructional devices have Office 2010.
- 37% of student instructional devices have Office 2007.
- 35% of student instructional devices have Office 2003 or earlier.

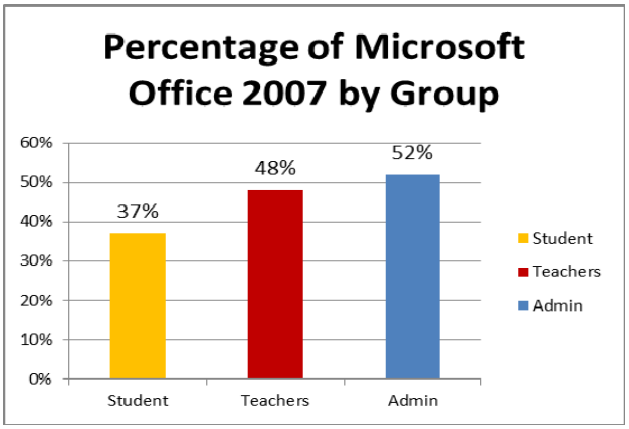
Microsoft Office Application (Teacher)

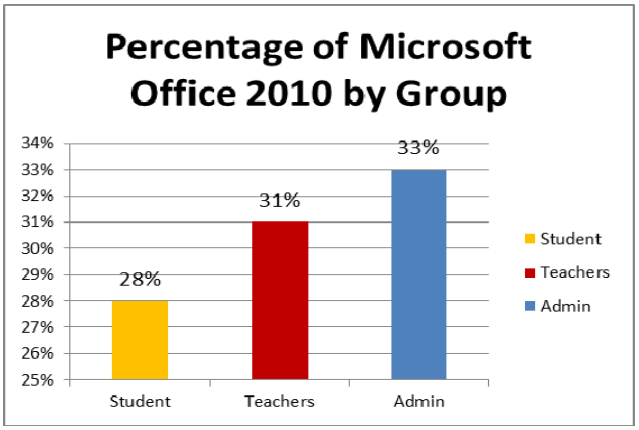
- 31% of teacher instructional devices have Office 2010.
- 48% of teacher instructional devices have Office 2007.
- 21% of teacher instructional devices have Office 2003 or earlier.

Microsoft Office Application (Administrator)

- 33% of administrator instructional devices have Office 2010.
- 52% of administrator instructional devices have Office 2007.
- 15% of administrator instructional devices have Office 2003 or earlier.







Web-Based Productivity Tools

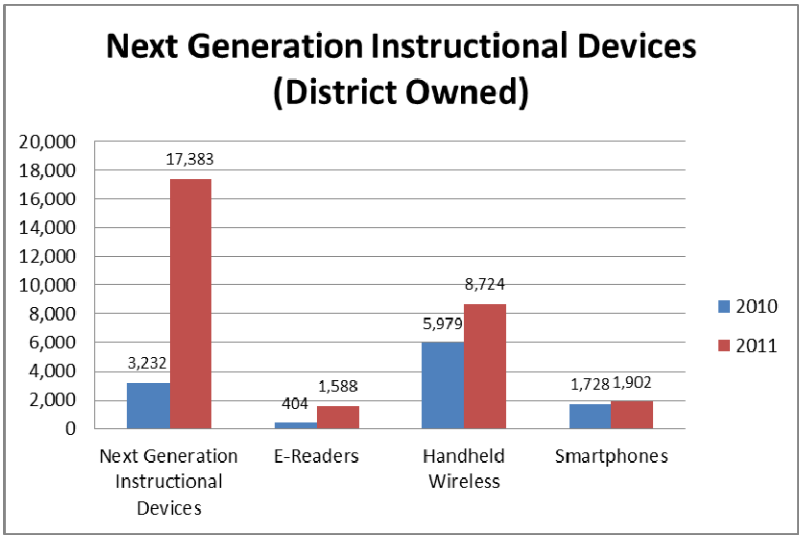
68% of districts utilize Web-based productivity tools (i.e. Office Online, Google Docs).

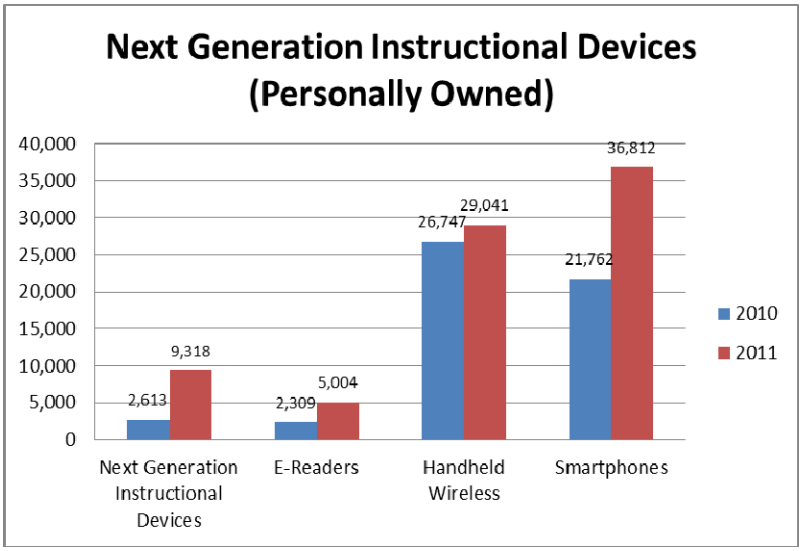
- 32% report no usage.
- 37% report minimum usage (1% - 5%).
- 26% report partial usage (6% - 50%).
- 5% report significant usage (>50%).

Section 4: Other Computing Devices

Handheld Computer Systems (district-owned devices only)

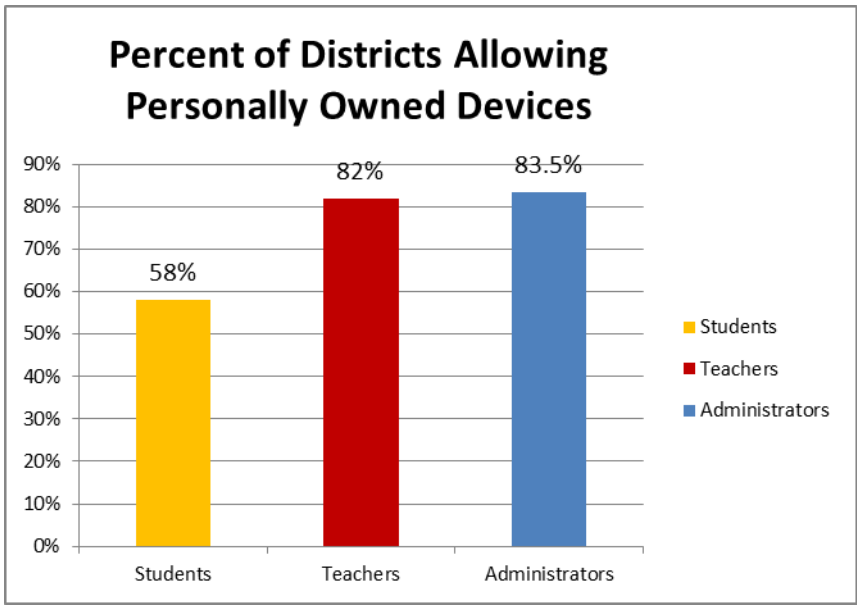
- 1,903 smartphones (Windows Mobile, iPhone, Droid, Blackberry, etc. which provide wireless email, texting, internet access and other on-online services) in use, an increase of 175 devices from 2010.
- 17,383 Slates (iPad, Galaxy, Xoom, etc.), 1,588 E-Readers (Kindle, etc.) and 8,724 handheld wireless devices are district owned.





Personally Owned Devices

- Permitted by districts to be brought to school:
  - 58% of districts allow students (increase of 11% from 2010).
  - 82% of districts allow teachers (increase of 12% from 2010).
  - 83.5% of districts allow administrators (increase of 11.5% from 2010).



Section 5: Technology Leadership

Personnel

Schools with a School Technology Coordinator (STC)

- 979 schools have an STC (down from 1,005 last year).
- $513 is the average stipend (down from $563 last year).

Schools with a School Technology Leadership Program (STLP)

- 861 schools have an active Student Technology Leadership Program.
- Average STLP leader stipend is $291 (down from $305 since last year).

Technology Skills

- 82% of districts have implemented the technology skills for students as defined in the Program of Studies (up 2% from last year).
- 68% of districts evaluate student technology skills (down 1% from last year).
- 84% of districts have defined and implemented technology skills and knowledge assessments as part of the district evaluation plan for teachers.

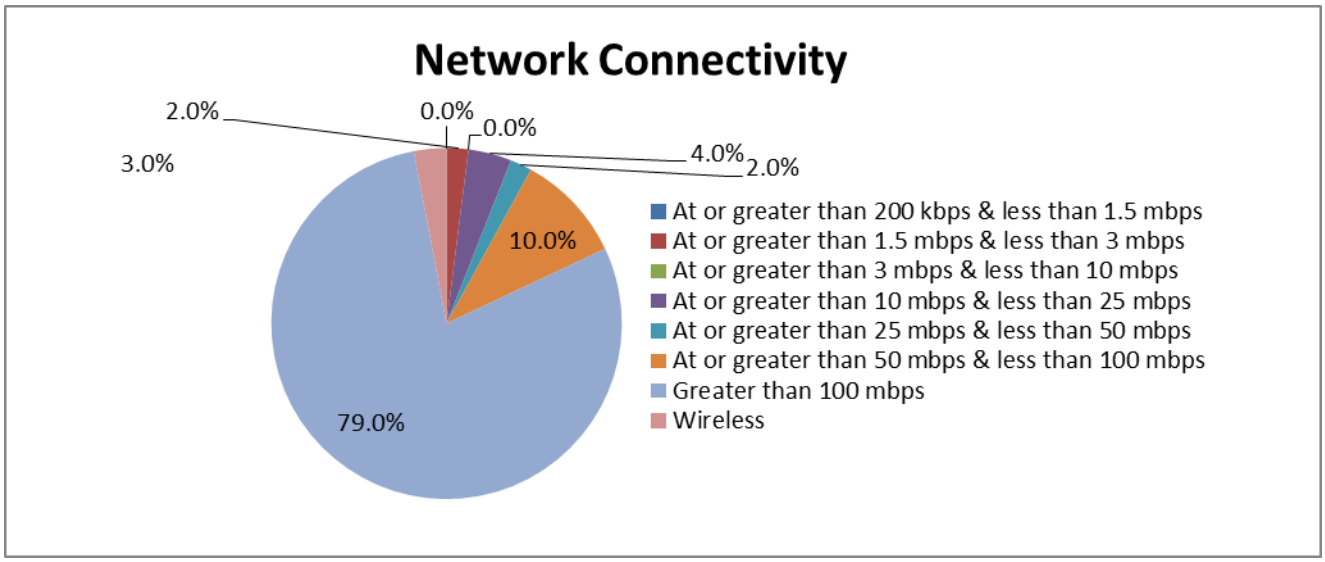
Digital Citizenship

The data below indicate the percentage of districts that have adopted the nine elements of Digital Citizenship as part of a technology culture through either curriculum or an Acceptable Use Policy for students and staff.

- Digital Access – 95%, increase of 4% from 2010.
- Digital Commerce – 60%, increase of 6.5% from 2010.
- Digital Communication – 90%, increase of 3% from 2010.
- Digital Literacy/Education – 85%, increase of 4% from 2010.
- Digital Etiquette – 86%, no change from 2010.
- Digital Law – 72%, increase of 3% from 2010.
- Digital Rights and Responsibilities – 93%, increase of 3% from 2010.
- Digital Health and Wellness/Safety – 72%, decrease of 7% from 2010.
- Digital Security/Self Protection – 86%, increase of 1% from 2010.

Section 6: Network Connectivity

- 95% of schools are connected to WAN at or greater than 3mps.
- 3% of schools are connected by wireless, up from 1% last year.



Section 7: Ease of Access to Telephonic Services

Ease of Access -- Telephonic Services

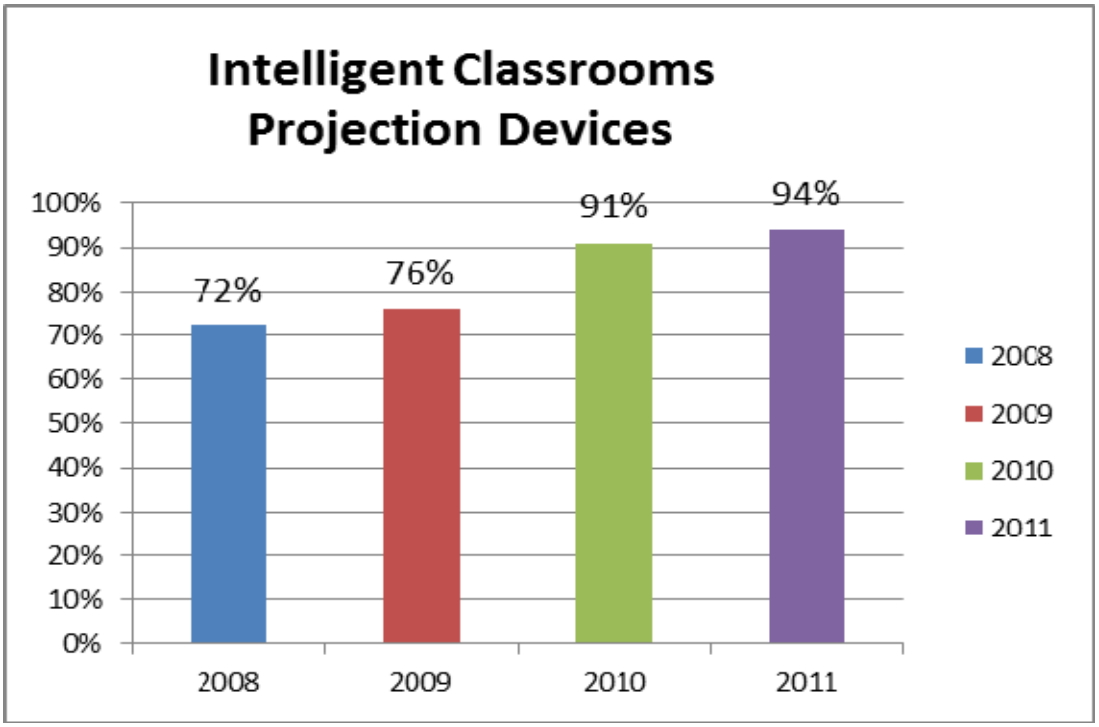
- 27% of schools have implemented a voice-over-Internet phone system.

Districts Phone System Upgrades/Replacements

- 40% of schools anticipate replacing or upgrading their phone system in the next two years. 83 percent of these schools will upgrade or replace to a Voice over IP (VoIP) system.

Section 8: Intelligent Classrooms

- In 2011, 40,403 projection devices were in use, up from 38,684 last year (approximately 94% of classrooms have access to permanently mounted or mobile projectors).



- The use of plasma/LCD wall-mounted TVs has increased to 2,311, 263 more than in 2010.
- 100% of classrooms have access to at least one of the following: interactive white boards, wireless slates, document cameras.
- Approximately 36% of classrooms have access to Individual Responder Systems (clicker type devices), a 4% increase from 2010.

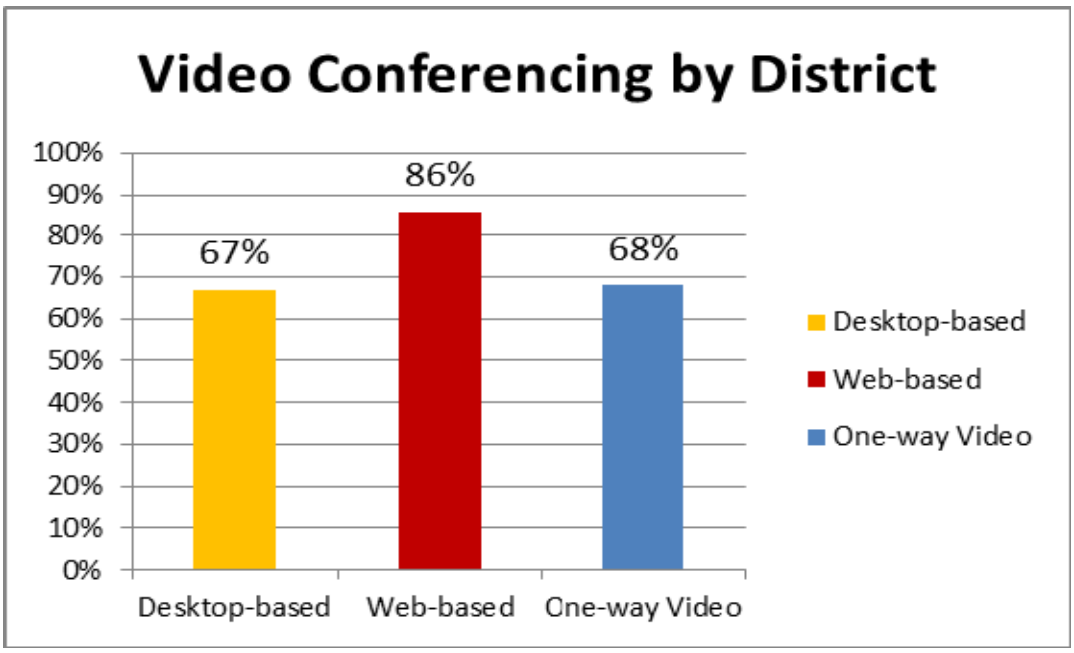
Section 9: Video Conferencing/Web 2.0 Collaboration/Online Assessment

Video Conferencing

- 211 classroom-type systems (i.e., Tandberg, Polycom) are owned statewide by districts.

Video-Based Communications Usage by Districts

- 67% utilize desktop-based products (WebEx, Adobe Connect, Elluminate, Tandberg MOVI), increase of 6% from 2010.
- 86% utilize Web-based products (iChat, SKYPE), increase of 8% from 2010.
- 68% utilize one-way video broadcast methods (webcast, podcast) increase of 7% from 2010.

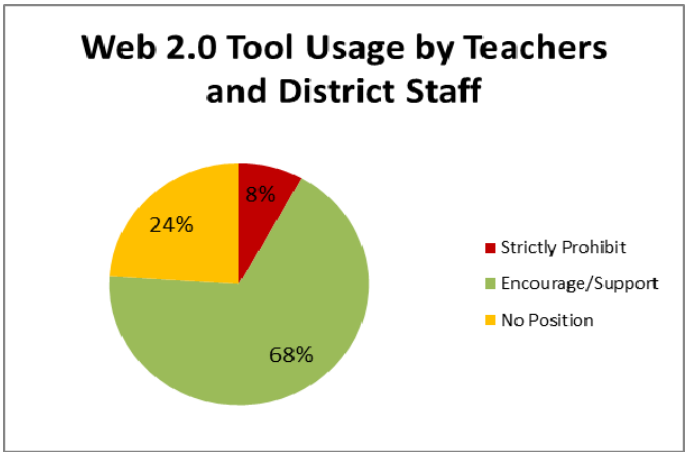


Web 2.0 Tools

50% of districts have a board of education policy on the use of Web 2.0 tools (e.g., Facebook, Twitter, and YouTube), increase of 7% from 2010.

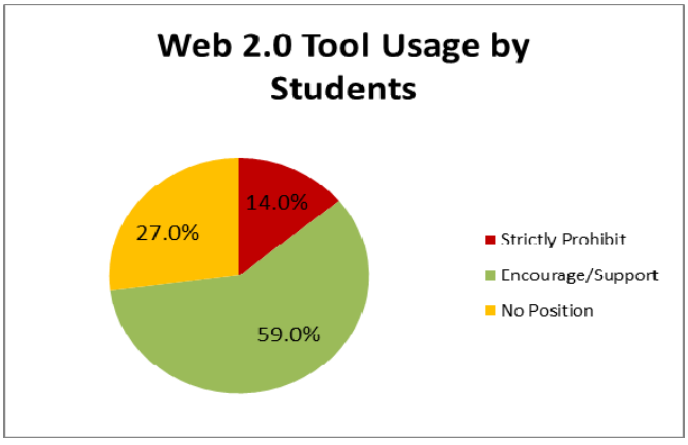
Web 2.0 Usage by Teachers and District Staff

- 8% strictly prohibit usage by teachers and district staff, decrease of 3% from 2010.
- 68% encourage/support usage by teachers and district staff, increase of 7% from 2010.
- 24% have no position on usage by teachers and district staff, decrease of 4% from 2010.



Web 2.0 Usage by Students

- 14% strictly prohibit usage by students, decrease of 7.5% from 2010.
- 59% encourage/support usage by students, increase of 12.5% from 2010.
- 27% have no position on usage by students, decrease of 5% from 2010.



Online Assessment

94% of districts use instructional devices (desktops, laptops, netbooks, etc.) for formative testing purposes, increase of 4% from 2010.